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IN THREE SECTIONS

Section I

Accounting For Waste in Industry

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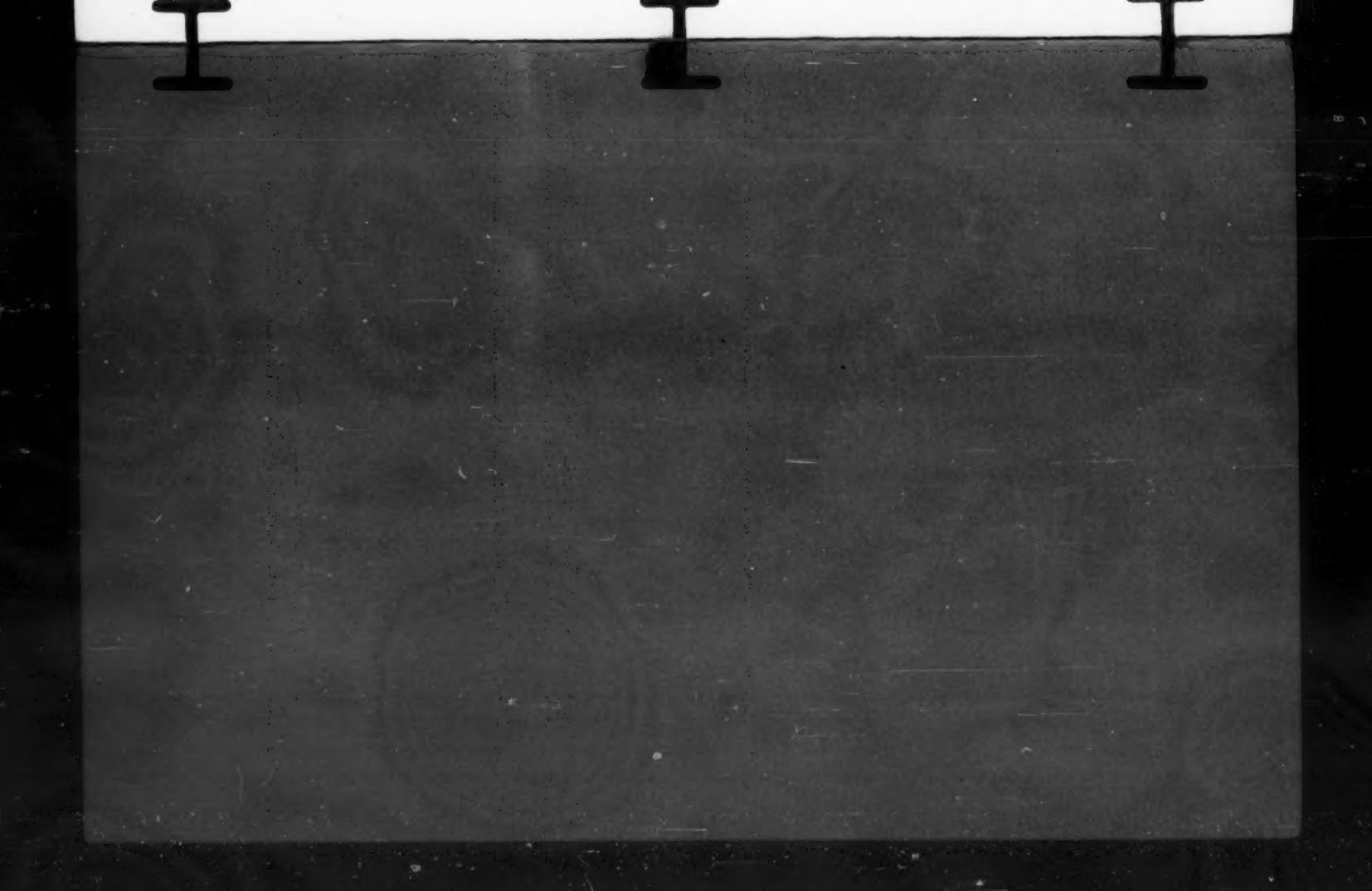

Accounting For Waste in Industry

By

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The National Association of Cost Accountants does not stand sponsor for views expressed by the writers of articles issued as Publications. The object of the Official Publications of the Association is to place before the members ideas which it is hoped may prove interesting and suggestive. The articles will cover a wide range of subjects and present many different viewpoints. It is not intended that they shall reflect the particular ideas of any individual or group. Constructive comments on any of the Publications will be welcome.

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EDITORIAL DEPARTMENT NOTE

It has always been a problem for the cost accountant to find out the cause of waste and recommend methods of elimination wherever possible. Particularly since we have had the advent of standard cost procedure has this been true, for with the creation of standards and the necessary follow up, it has been possible not only to measure material wastes, but also wastes of time. Therefore the problem of accounting for waste and eliminating it, is always one that is of interest to our members.

The author of our paper this time is a native New Englander, having been born in Worcester, Mass., and having taken most of his training in that city. He graduated from Worcester Tech in 1919 in Electrical Engineering and followed his college training with two years at the General Electric Company, at Schenectady, N. Y. as Test Engineer. During the next year, he was with the American Optical Company as Electrical Engineer and then followed six years experience with V. D. Moody, Consulting Engineer of New York City.

When the great war came along he enlisted as a private in the Signal Corps of the Army and was commissioned a Captain two years later. Since his discharge from the Army, he has been the Assistant Superintendent at the Crompton & Knowles Loom Works, Worcester, Mass.

This paper was delivered before the Worcester Chapter.

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ACCOUNTING FOR WASTE IN INDUSTRY

IN the last few years there has been a great deal written on the subject of "Waste in Industry". Close students of this great problem have realized that before there can be a material reduction in the sum total of this waste, much earnest, painstaking work must be done. The solution of such a problem is not one of hours but of years.

Fundamental changes in our economic, financial, managerial and operating practices will be required. There is a need of both co-operative and individual effort. As regards groups or individual industries, each must face its own responsibilities and meet its own problems. Each individual—plant executive or worker—must discover his own opportunities and then accept responsibility for performance.

There have been great changes in industry in the last fifteen or twenty years and it is evident that radical changes are coming; in fact, some of them are here already. It behooves farsighted executives to seek ways and means to interpret the signs of the times.

If the progress to date is an indication of what the future has in store, then we are going to witness a development of the utmost value to industry—a development which, in fact, will be a cost development that will constitute profit assurance.

The Problem of Waste

Every one of us who has had close contact with this great problem of waste has been amazed at its great proportions and its tremendous effect on our business life.

Waste in Industry was stated by the Hoover Committee to cause an annual loss of $3,000,000,000. and that the excess capacity in plant and equipment amounts to almost 50%. One-Half of the responsibility for this excess capacity was considered chargable to management.

The Postoffice Depaprtment of the United States has become skeptical about the reputed thrift and common sense of American business men. During 1927 the direct-mail advertisers in this country wasted over $600,000. through the use of obsolete mailing lists, combined with the failure to have return addresses printed on their envelopes. These figures include only advertisers who mailed

their circulars under first class postage. A very much larger amount, which cannot be estimated, was lost by advertisers who used third class postage.

Although business men would scoff at anyone who used old-fashioned methods or did anything else which they consider passé, they are addicted to the more expensive habit of using obsolete mailing lists. John Jones may be dead, or he may have moved to Honduras, but the captains and corporals of industry continue to assault his empty citadel with eloquent appeals to purchase bargains in furniture, shirts, oil stock, etc.

The records of the Postoffice Department show that during 1927 12,688,567 letters, containing circulars and advertising matter, all directed as first class mail, were disposed of as waste by the dead letter service. Figured at five cents each to cover the cost of material, printing, labor and postage, the total amounts to $633,528,35. This advertising matter furnished over 50% of all the dead letters handled during the year.

Under the practice of using non-card or blank envelopes, the mailer has no means of knowing how many of his circulars or ads have failed of delivery and been disposed of as waste at the dead letter office. As an example of this, in October, 1927, the Washington dead letter office destroyed over 50,000 circulars from *one* mailing of a large Eastern firm mailed in non-return card envelopes, but sealed under first class postage. The waste in one mailing of this firm was not less than $2,500.

Out of the 25 million odd dead letters handled during 1927, over one million contained valuable inclosures. The money, draft, checks and money orders contained in these amounted to some $5,317,000. and while most of these were returned eventually to the writers, it was figured that there was a loss of over $53,000. in interest, etc. The astonishing thing about it all is that in spite of all that has been said, published and brought to the attention of mailers in regard to the losses they are sustaining, many apparently otherwise intelligent business men continue to throw their good money away by this method.

Many illustrations could be given of the needless waste of labor and materials in our business life, but I feel you all know it has existed to a tremendous degree.

Waste of Time and Materials

Time waste differs from material waste in that there can be no salvage. The easiest of all wastes, and the hardest to correct, is this waste of time, because wasted time does not litter the floor like wasted material.

Having on hand twice as much material as is needed—which is only another way of saying twice as much stored human labor as is needed—is the same as hiring two men to do the job that one man ought to do. Picking up and reclaiming the scrap left over after production is an excellent thing, but planning so that there will be no scrap is a much finer accomplishment.

Until industry gets down to a better basis of planning raw material uses, waste will be prevalent.

Effect of Waste on Our Business Life

Waste plays a tremendous part in our industrial life and a large part of the cost dollar in industry is made up of this waste.

Many of you no doubt realize the effect this great problem has on our business life. However, it is often the case in matters of this kind that the full significance of the problem is brought home to us only insofar as we are made to realize how much we are personally affected. It is all very well to talk about these things abstractly, but it is only when they are brought home to us as a personal issue that we begin to appreciate their true significance. Many fail to appreciate how our cost of living is affected by this waste and how much more could be accomplished if we could prevent it.

Causes of Waste in Industry

The principal causes are:

1. *Reduced Production* intentionally caused by employees.

2. *Delayed Production* caused by idle men and machines, as well as delayed material.

3, *Lost Production* caused by men staying out of work, and caused by ill health, physical defects and industrial accidents.

4. *Lack of Proper Supervision* so that men are not suppplied with the necessary material, tools, fixtures, prints, etc., to get out the work at the lowest cost.

Production Schedules

There is, perhaps, no factor which contributes more to minimizing cost of manufacture than properly planned production. The scheme of operation often fails to provide the longest practicable runs and the least number of changes in the set-up of machines.

Much has been written about planned production and proper machine scheduling. There is no doubt but that a great deal must be done in the future to work out the problem of handling non-stock orders more efficiently.

Planned Production

No factor contributes more to reducing the cost of manufacture than uniform monthly production throughout the year. This subject is worthy of considerable study, as it offers opportunities for profit which are very great. A few of the many advantages which may be claimed for uniform production are:

1. It maintains balanced and efficient working forces.
2. By providing for the distribution of work, it allows operation with the smallest possible force and these operators are kept busy all the time.
3. It saves the cost of spoilage which always follows as a result of the employment of new and inexperienced operators.
4. It saves the time of department heads and supervisors in teaching new employees.
5. It provides the best utilization of the equipment.
6. It enables the industry to operate smoothly and without confusion all along the line from the ordering of raw materials to the shipping of the finished product.

It is true that all industries are not able to take full advantage of uniform production but, whenever the normal quantity of work coming through is insufficient to meet this condition, it is desirable as far as practicable to provide additional work by selecting those items which produce the smallest increase in investment and provide the greatest amount of work.

The Importance of Scheduling Intelligently

One of the most important factors preliminary to the actual scheduling of work is the proper selection of what should be worked next. Unless this phase of planning is handled in order of

importance, poor service and higher cost of production will result, and production planning will become a failure in its primary cause for existence—that is—good service at a reasonable profit.

The work which is needed immediately for orders on hand should be worked first; other work, for stock and future orders, should be held and grouped in such a way as to provide the longest runs and the least number of changes in the set-up of machines.

Having decided what to work, the next step is to schedule the work in such a manner and on such machines as will produce the goods for the least cost and in the shortest possible time.

Outstanding Results from Good Planning System

1. Stabilizes the working force and allows more uniform production.
2. Avoids congestion and confusion and provides more orderly operation of all manufacturing departments.
3. Reduces time for material to go through the factory.
4. Increases operating efficiency.
5. Allows accurate judgment of the work ahead and thus allows intelligent promises on new orders.
6. Plans the work for the foremen and thus saves time that can be more appropriately applied in maintaining quality, reducing waste, reducing costs, etc.
7. Controls the use of equipment, thus minimizing the expense of idle machines.
8. Reduces stocks in process
9. Improves service to the customers.

Why Standardization is Stressed

In recent years much has been said and written about simplified practice and standardized products. We all appreciate that if a few kinds or styles of standard article are manufactured, the production can be greatly increased, with a corresponding decrease in inventories and the amount of waste is greatly reduced. The automobile industry is a very good example of a standardized product. They have limited the number of models to a very few and have absolutely standardized their manufacturing operations to get the largest output, in the shortest time, at the least cost.

Some of our industries can never hope to approach their condi-

tion on account of the great variety of our product, but we can do a good deal.

The Department of Commerce estimated that the average waste in the metal trades was about 28.%, of which one-third of the waste was due to lack of standards and one-third due to lack of simplified practice.

Simplified Practice

Simplification is "that policy of management which seeks to conduct all activities, and perform all functions of an enterprise in the least elaborate manner, consistent with any given purpose". The term used for specific application of simplification to manufacture of goods is "simplified practice". This term means reduction of variety in sizes, dimensions and slight differences in everyday commodities as a means of eliminating waste, decreasing costs, and increasing profits and values in production, distribution and consumption.

As industries grow, more and more products are added to lines produced; the number of sizes, styles, types or patterns of each product is increased. This multiplication of variety throws heavy burdens on manufacturing and sales departments, and the work of conducting business becomes increasingly complicated with possibly decreased profits, or actual losses.

It is then necessary to decide what varieties must be eliminated, beginning with those which yield the least return. Some concerns have eliminated over 90% of their varieties without serious consequences. In many plants, lines are constantly under review, and simplification is a continuing policy of management.

Program of Simplification

In some industries it has been necessary to:

1. Secure all feasible reduction in number of styles, varieties, sizes, colors, finishes, etc.
2. Eliminate styles and varieties of articles which violate the principle of economy in the use of materials.
3. Eliminate features of adornment which add nothing to the usefulness of articles.
4. Foster substitution of articles and materials which are plentiful, for those which are scarce and difficult to produce.

5 Standardize sizes, lengths, widths, thicknesses, weights, gauges, etc., in such a way as to preserve sufficient strength and durability, but to effect economies in materials and labor.

6. Reduce waste of materials in manufacturing processes generaliy.

7. Secure economy in the use of samples for selling purposes.

8. Secure economy in containers by eliminating smaller and odd sizes.

9. Secure economy in packing by increasing the number of units per package, and economy in shippng space and packing materials by bailing, instead of boxing, wherever practicable.

Progress Already Made in Simplification

Excellent progress has been made in the last few years in most industries in the elimination of waste by simplified practice and standardization. It will be interesting to note some of the reductions made in our industry and some of the other industries due to the close study which has been given to this subject:

	% Reduction of Items Used
Nuts	30.5%
Bolts	52. %
Collars	43.5%
Machine Screws	64.1%
Wood Screws	28. %
Set Screws	49. %

Lamp bases—180 reduced to 6
Common brick—44 styles reduced to 1
Hot water tanks—120 reduced to 14 types
Sink traps—1114 styles reduced to 72
Grape baskets—reduced from 31 to 3 sizes.
Auto lenses—reduced from 88 to 4
Raditor Caps—reduced from 58 to 15
Cigars—cut from 150 to 6 varieties
Milk bottle caps—from 29 to 3 styles
Milk bottles from 49 to 9 styles
Retail Drug store—reduced stock from 22,000 items to 7,000.

Woolen Industry—Reducing size of swatches saves 3,000,000 yards. Elimination of styles and needless adornments saved 15%

of quantity of cloth used—approximate saving in wool 50,000,000 yards.

Furniture—Savings by reduction of styles and varieties amount to 4,856 tons of steel and 1,500 tons of brass.

Lumber—One large lumber company reported a saving of $474,000 in one year due to standardization.

War Department—The War Department cited a saving of 44% in one of its big users by following simplified practice in purchasing.

Gloves—Gloves and mittens reduced 60% in styles or varieties.

Steel Windows—Reduction of 94% in types.

Hospital Textiles. 575 to 26 or 95% reduction.

Packing—Knit goods industry estimates savings of 17,312 carloads of space; 141,800,000 cartons and 500,000 packing cases, due to better packing methods.

Rubber Footwear—5,500 styles eliminated, saving 29,012,600 cartons; 5,245,300 square feet of shipping and storage space; 2,250,272 pounds of material will not have to be dyed; 74,750 pounds of starch; 30,380 gallons of varnish; 125,300 pounds of tissue paper; 49,617 days of labor.

Shoes—There are 102 sizes of men's shoes. It is estimated that the extra expense in the shoe business caused by odd sizes, amounted to $100,000,000 in one year. It is said that 91% of every 100 persons entering the retail shoe business eventually fail or have to go out of business, more than one-half of them due to odd sizes. One large shoe company in 1920 had 2,500 styles at an average price of $10.46. In 1923 they cut these to 100 styles at a standard price of $6.60. Records of this company show that out of 102 sizes of men's shoes, 62% of all sales are on the 18 best selling sizes; 23% of sales are on the 17 next best selling sizes; and only 15% on the other 67 sizes. The same thing is true of the women's sizes.

As a result of simplification, this large shoe company has doubled the number of shoes sold, on 25% less inventory.

We could go on and give you many more illustrations of the tremendous reductions in waste due to simplification in industry, but we feel that the above are typical of the excellent progress being made. The saving of even a few drops of solder per can has

made a saving of hundreds of thousands of dollars in the canning industry.

Results of Simplification

Some of the results are:

1. Less capital tied up.
2. More economical manufacture.
3. More efficient labor.
4. Better service to the trade.
5. More efficient sales force.
6. Increased rate of turnover of material.
7. Easier financing.
8. Fewer factory shut-downs.
9. Easier planning and scheduling.
10. Decrease in number of production processes.

Reduction of Waste in the Factory

The year 1923 was a big production year at our plant and, as is often the case, in our intense desire to rush production to meet the demands of the trade we, perhaps, were over-zealous in building up stock. The result was that in 1924, when business fell off, we found that we had on our hands a lot of material that we could not turn over promptly. This eventually resulted in our scrapping considerable material in December, 1924. It also taught us many lessons which we will not forget.

We were determined that we would not be caught again and that our scrap losses in the future would be much less.

Effort was made to impress strongly on the foremen and workmen the necessity of better control of stocks and reduced scrap losses.

Several meetings were held, the whole situation was reviewed, and the foremen were given complete data on the scrap losses of the previous year. That much of the loss was preventable was brought home to them and the program of waste elimination was outlined to them. A shop committee was organized to follow the problem closely and to go over shop scrap with the following points in mind:

1. Condition of material being scrapped.
2. The lesson to be learned.
3. Possible application of this lesson now.

4. Steps to be taken to see that the "lesson is learned" by those responsible for the loss.

It has been a long, steady pull, with a great many disappointments but we feel we have made considerable progress.

We have stressed two fundamentals:

1. All scrap and surplus material must be sent off the jobs weekly.
2. The scrap must be analyzed to fix the individual responsibility and corrective action taken to see that "the lesson is learned" to prevent similar loss in the future.

We do not pay for bad work and if castings do happen to get into the shop with obvious defects, the department doing any work on them is penalized. The scrap loss is listed according to the individuals responsible and the worst offenders are weeded out.

It is interesting to note the reduction in our shop scrap in 1927:

Reduction of 83.7% from year 1924
" " 48.7% " " 1925
" " 46.4% " " 1926

We have a lot of fragile material and breakage is a big item. However, our breakage last year was 62.3% less than in the year 1925. In like manner, our spoiled work was reduced 60% from the loss in 1925. This fine reduction was obtained only by a constant drive to eliminate scrap. The losses were individualized daily and the lessons were brought home to the offenders. We find that we must be eternally vigilant or the scrap will increase. We established bogies for all departments and had an honor roll for the departments having low scrap losses. We also have a shop committee, who are constantly working on this problem helping the foremen to keep their losses down. As all foremen and General Foremen are marked on their scrap performance in their management reports, they are very anxious to keep their losses at a low figure. We consider our foremen as "little managers", and as such we expect them to be able to control their losses within the bogies we set for them, and they are rated accordingly in their management reports.

In our foundry we have made similar reductions. One item of very material savings in the past year was the intallation of a new crane charging equipment. This has resulted already in the

elimination of eight men and we hope in the near future to eliminate two more men. We will then be down to a gang of ten men to handle 80 tons in one heat.

In the textile industry there are many forms of waste, and in order to get satisfactory results in waste elimination the executive must study his plant and know his product and his work people. I could give many illustrations of this, but one will be sufficient to make the point.

For one of the large New York movie houses a great oval chenille rug 41′ x 58′ (on seam lengthwise) was made. Eighteen designers worked three weeks to provide the 8 million checks to govern the weave of 32 million tufts in the rug. The paper was cut 6,000 yards by hand shears while 2½ tons of yarn were spun and dyed. The yarn for the wool backing weighed 1,300 pounds. Twenty weft weavers worked three weeks, the blanket was cut into 40 miles of chenille cord and four rug weavers worked another three weeks to complete the giant rug. When sheared, the rug weighed better than 2½ tons, took 14 men to roll it up, and was fully one inch in thickness. This giant rug cost $50 a square yard or about $18.000.

The rug manufacturers thought that this rug surely would be a monument to their organization for many years to come. Imagine their surprise when the manager of the theatre said he expected only one year's service out of the rug in the foyer of the theatre. The difference was that he knew his American Public. The problem with the rug is that over one hundred persons per day on the average "park their gum" on that rug. It is necessary to use solvents and sharp instruments each day to get the chewing gum out, thus affecting both the fabric and the color. It is not the natural wear of 30,000 persons on a Sunday or the million attendance in the first seven weeks. It is the popular lack of respect for such a fine work of craftsman's art because it is under foot. The same thing applies to our everyday problems. You must know the problem and know the people.

Importance of Waste Elimination

"We feel that elimination of waste is one of Management's greatest problems. In fact, Management has been charged with being responsible for half of all industrial waste.

Today, more and more, the success or failure of the enterprise rests upon the shoulders of Management. Management of only one sort can meet the conditions which prevail now and which will prevail for some time to come; good, sound, all-around Management."

Many industries have productive capacity considerably in excess of what their markets can be expected to absorb at present. The manufacturer who can rely today on steadily increasing volume to increase profits and lower costs, is the exception. The excess capacity to produce in almost every industry is forcing prices downward, or at least preventing them from increasing.

Need for Increased Turnover

Perhaps one of the most significant changes which a manufacturing business can make right now is to obtain a faster rate of capital turnover. This is just exactly what F. W. Woolworth stores did. They increased their turnover from 5 to 9¼ times a year. On the average, their 1,581 stores sold out their entire stock in less than every six weeks last year. They now carry six weeks' supply instead of three months as formerly; therefore, about 50% of the capital that formerly was tied up in merchandise is released for other purposes. Because they are able to operate throughout the year with about half the stock that was once required, it is no longer necessary for them to borrow any money.

Fortunately there are many ways of speeding up turnover without handicapping the business. One of the best ways is to eliminate unnecessary duplication in lines. At one time Woolworth carried 32 brands of talcum powder; now they carry only 6 brands. They formerly handled 26 varieties of screw-drivers; these have been reduced to 6 varieties. Hundreds of other lines were similarly simplified.

Present Day Tendencies

In the last year or two executives, who have been alive to the changing industrial conditions, have been busy squeezing out the water in their concerns. They have been getting down to brass tacks and taking the necessary steps to bring their operations into line with the demands of the business.

In many industries the days of big volume are gone. The men

who are responsible for the payrolls are giving them a lot more attention than formerly. This is true especially right here in New England. When we think that one of the mills, where the payroll once was $2,000,000, was auctioned off a few weeks ago, we must realize the seriousness of the situation. One plant taxed for $280,000 brought an offer of only $5,000.

In the first quarter of 1928, there were more failures in Worcester County than for some time, and the liabilities were much greater:

Year	*No. of Failures*	*Net Liabilities*
1925 1st Quarter	29	$150,594
1926 1st "	28	334,423
1927 1st "	37	451,517
1928 1st "	41	1,184,832

The liabilities were over 7 times as great in the first 3 months of this year as in the same period in 1925.

It is truly the day of progressive management, and where this is lacking the results are likely to be disastrous. The management is measuring the value of the employees in terms of dollars and cents. They are asking many pertinent questions, with a view to ascertaining whether the high payrolls are necessary.

Superintendents have been charged with the responsibility of securing increased efficiency and producing at lower costs. The individual is being more closely scrutinized. He must not only keep busy, but he must also produce results. The machinery and equipment is also being gone over carefully to see if it is doing the work economically, or whether it can be replaced by a more modern machine that will do more and better work at less cost. This applies as well to office equipment as it does to factory equipment.

But even with improved machinery we still have the human element. I believe that the majority of the work people mean to do the right thing by the employer. They want to be loyal and efficient and if they are not getting satisfactory results, the trouble is usually higher up.

In days gone by, orders came easy in many cases, extra and sometimes unnecessary men were added to the payroll, large sums of money were spent without much investigation, department heads

requisitioned supplies freely, supervision was lax, management often indifferent, and the organization was not driven to do its best. There was a lot of business and almost everyone was making money.

Great changes are taking place today. Old business institutions which for years dominated their fields are now passing on. Their business has slowed down, their profits have vanished, and banks have withdrawn their credits. Why? The old order of things is passing. This is the age of quick changes in the business world. It will be an age in which youth will be supreme and a few men of exceptionally strong force will crowd the weaker executives out of the picture. Industry will not stop. It will move faster than before and there will be far-reaching changes.

Reductions in Non-Productive Departments

There are still many fine opportunities for savings in the offices and so-called non-productive departments. It is interesting to note that during 1927 in our non-productive departments we made some reductions of between 33% and 51% in total expense from the costs in the year 1924. In three non-productive departments, by the operation of our budget system, for the last three years we have made a saving of over $56,000. (In an expense of $246,000.) For the first quarter of 1928 some accounts in the non-productive departments were as much as 72% less than the costs in 1925, which was a big production year with us.

Reducing Waste in Office Expense

For years, industrial management has been concentrating generally on the producing end of the business, with the result that they have reduced the opportunities for big reductions in costs in this end. Many executives have failed to give equal study to the clerical expense. It is our belief that if many concerns who have prospered in recent years would compare their total clerical expenses, they would find that the relative cost is now 75% to 100% more than it was 10 years ago. The reason for this is that these concerns have not had the same yard-sticks to measure clerical expense that have been used on the productive labor. This is a big problem and only the application of good common sense is going to get the best results. We should all forget about the past and look to the future.

It has been said that the average housewife takes 3,000 unnecessary steps every day. How many of you can give any true figures on the unnecessary moves of your clerical help every day? The office is today as promising a field for lowering costs as the shop was 10 or 12 years ago.

The first step is to determine the average time required to complete the different routine jobs. With this data, steps can be taken to so regulate the work of the individuals in the various departments as to have a steady, even flow. Then an analysis must be made of all correspondence and forms used, as undoubtedly some of these will be found to be unnecessary. Obsolete forms should be reduced and the remainder should be revised as to the items necessary to get the desired results with the least expense. All unnecessary items should be eliminated and the forms reduced to the data which will best accomplish the results. Some concerns have taken this in hand already, and one large concern reported a saving last year of $50,000.

All items of office expense should be studied, as hundreds and even thousands of dollars can be saved by eliminating useless copies and using paper of a lower breaking strain, a change often so slight it is hardly noticed. In all large concerns there is a lot of correspondence which is superfluous and the files are filled with correspondence which serves no useful purpose. It is not alone the initial cost, but expensive filing equipment has to be bought to store it in valuable space which could be used to better advantage.

The office manager and department heads should be on the watch at all times to eliminate all waste of time and materials. Obsolete methods and equipment should be replaced in the interest of economy. You will find that the various departments have a variety of methods and these should be standardized as to the "one best way" to do the work. Business conditions have changed rapidly in the last two years and many concerns are not making money. In the manufacturing field ⅛ of 1% of the total number of corporations reporting made 67% of the profits.

With reduced prices and profits, the ratio of overhead increases automatically. In addition, due to the gradual increase in items of fixed expense, the actual volume of overhead has been tending steadily upward. Today the reduction of overhead is one of man-

agement's major problems and every alert executive is conscious of this fact and is trying to hold overhead in check with a firm hand. The real problem is to determine what kinds and amount of overhead are most profitable to the business as a whole and then to hold it there.

We ask the question: Is our overhead as low as is practicable to get the best results? You can answer this for yourselves only after a searching analysis of all the main items under "overhead" to determine what are absolutely necessary and to make sure that they do not include any large items of loss or wastage.

The major importance of office work as a factor in overhead is not generally recognized, but a study by the Harvard Bureau of Business Research shows that the office costs comprise a large percentage of the total general overhead. These percentages range from 24% in street railways to 61% in insurance companies. It is, therefore, apparent that the office should now receive the same critical scrutiny that the shop has received. All clerical jobs should be analyzed and organized along the most effective lines, costs determined, and the whole field of office work studied closely. The office should be a very helpful factor in lowering costs and thus increasing the profits of the business.

It is interesting to note that whereas in 1910, according to the U. S. Census, there were 1,737,053 clerical workers constituting 1.8% of our population, today approximately 3,509,000 people or 3% of our population are employed in the clerical group. It is reported that, with the exception of those engaged in agriculture, these clerical workers form our largest single occupational group.

This is a big field, therefore, and offers many opportunities for cost reduction and waste elimination. Office expenses in the great majority of companies are far greater than they need be. There is no question but that many opportunities exist to reduce the office expense without impairing the value of its service to the business. The clerical wage bill in this country is estimated to be between $10,000,000 and $12,000,000 a day. If the same modern methods are consistently applied to the office as have been applied to the shop, it seems reasonable to hope that a saving of $2,500,000 a day may be made. It is worth going after.

There are three general types of waste in the office:

1. Poorly planned routine work and indifferent control.
2. Obsolete operations or forms.
3. Needless reports and records which are not used to advantage.

What kind of a yard-stick is used to determine the output of the different clerical departments and of their personnel? It is dangerous to make general statements, but surely some satisfactory yard-sticks should be employed regularly.

System is a great thing, but the danger is that someone is always trying to suggest a new system because it is said to work somewhere else. These want to be studied carefully before they are adopted, to make sure they will work.

Often data is accumulated long after the necessity for it has passed and if a check is not made quarterly you may fill up a lot of files with worthless papers. The same applies to methods. A certain method may be established to serve a useful purpose, but unless constant check is made this may be continued long after there is any real need for it.

All office reports and forms should be studied carefully:

1. What can be eliminated?
2. Is it essential?
3. Can forms be combined?
4. How many copies are made? Are they all used?
5. Are the items arranged efficiently?
6. Is the record duplicated elsewhere?
7. Are any parts of it duplicated elsewhere?
8. Is writing eliminated as much as possible by the use of printed headings?

One excellent way to reduce waste is to reduce to a minimum the time required to carry on the essential clerical operations of the business. Every office job or routine should be studied systematically, not merely as a unit but as a step in the accomplishment of the main purpose of the business. What we want to develop is "the best way" to do each job.

We have no "cure-alls" for waste elimination, but on the contrary we believe that the only way to reduce overhead is by a systematic application of good common sense. It is not a matter of

days, but is a continuous process which should go on year after year.

What About the Future? It seems cold-blooded, but surely there is a marked change coming over industry. It is no time for lame-ducks, as the competition is getting keener and the pressure greater. With production greatly reduced, a good showing for the year can be made only by weeding out the inefficient. There is no place for the shirker or the disloyal worker. Management is becoming more efficient and the subordinates must fall in line.

Wages should not be cut, as the best interests of the country demand that the work people be kept at work and well paid for what they do. This means that the management must be alive to the problems of the company and be able to meet them energetically and wisely. It is only by such clear thinking and wise planning that industry of today can solve its problems and make steady progress, at the same time meeting its obligations and responsibilities, not only to the industry and the community, but also to the workers who make their success possible.

The great industrial enterprises of this country have, in the past, been built up by men who had the managerial gift and knew it. They had also ambition and initiative. It seems strange now, in view of the co-ordination of talent required for the conduct of the business of a great manufacturing corporation, that the foundations of many of them were the work of one man.

The yard-stick, by which the successful growth of business was measured, was the vision and ability to manage large affairs. That is, the man who directed the affairs of a rapidly growing business had to know how to pick men, delegate authority to them, and exact proportionate results from them. This will be true to a far greater extent in the future.

Since management in the past has been charged with being responsible for 50% of the waste in industry, it behooves all executives to broaden their vision and develop their sound judgment so that they can stay abreast of the new era of management, realizing full well that industrial waste is a gigantic problem requiring the best kind of work to constantly reduce it. No greater evidence of the necessity for decisive action is needed than the fact that many

good old New England industrial and business enterprises are no longer as prosperous, and many are actually in bad shape.

Business will be good—*for those who can take it*—and only *those who are competent will get it.* One sure way to be in a position to get business is to reduce waste to a minimum and have sound costs. You cost accountants must be prepared to answer the question—What are the results going to be? What is tomorrow going to mean to the business? It is very essential that in the future we have a cost development that will constitute profit assurance.

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